Policy briefing

Cutting Europe's lifelines to coal

Tracking subsidies in 10 countries

Shelagh Whitley, Laurie van der Burg, Leah Worrall and Sejal Patel

Key findings

- This report reviews subsidies to coal in 10 countries that produce 84% of Europe's energy-related greenhouse gas emissions: France, the Czech Republic, Germany, Greece, Italy, Hungary, the Netherlands, Poland, Spain and the United Kingdom (UK).
- Despite significant commitments to address climate change, fossil fuel subsidies and air pollution, all ten countries reviewed still provided some form of subsidy to coal, in the form of budgetary support or tax breaks, in 2016.
- Six of the countries have even introduced new subsidies, worth €875 million per year, to support the coal sector since 2015, the year of the Paris climate agreement.
- In aggregate, the 10 countries reviewed have provided €6.3 billion per year in subsidies to coal (on average for the 2005 to 2016 period), across a total of 65 subsidies identified.
- Although the value of 16 subsidies has not been able to be quantified, this year's G20 host, Germany, provides the highest level of average annual subsidies. Most of Germany's subsidies are focused on coal mining, and the government has committed to ending these by 2018.
- Finally, only a minority (14%) of subsidies by value (€859 million per year) are supporting workers and communities to transition away from coal mining, while and several subsidies with the stated objective of supporting the energy transition (via EU ETS, capacity mechanisms and biomass power) are going to coal (€1 billion per year).

Recommendations

- Governments in Europe must ensure that mechanisms with the stated focus of supporting the energy transition do not support coal. This includes ending support for coal under the EU's Emissions Trading Scheme and capacity mechanisms, along with subsidies to biomass power generation.
- Any remaining subsidies must be focused on supporting a just transition for workers and communities – in a manner that ensures that companies and utilities also meet their obligations.
- The above must be backed up by increased transparency and accountability to meet existing subsidy phase-out commitments – with all governments undertaking consistent annual reporting of subsidies to coal and other fossil fuels.

Background

Europe's shift away from coal

With the Paris Agreement on climate change coming into force in 2016, world leaders not only reaffirmed their commitment to limit the increase in global average temperature to well below 2°C degrees, but also agreed to pursue efforts to limit global temperature rise to an even more ambitious 1.5°C target (United Nations Framework Convention on Climate Change (UNFCCC), 2015).

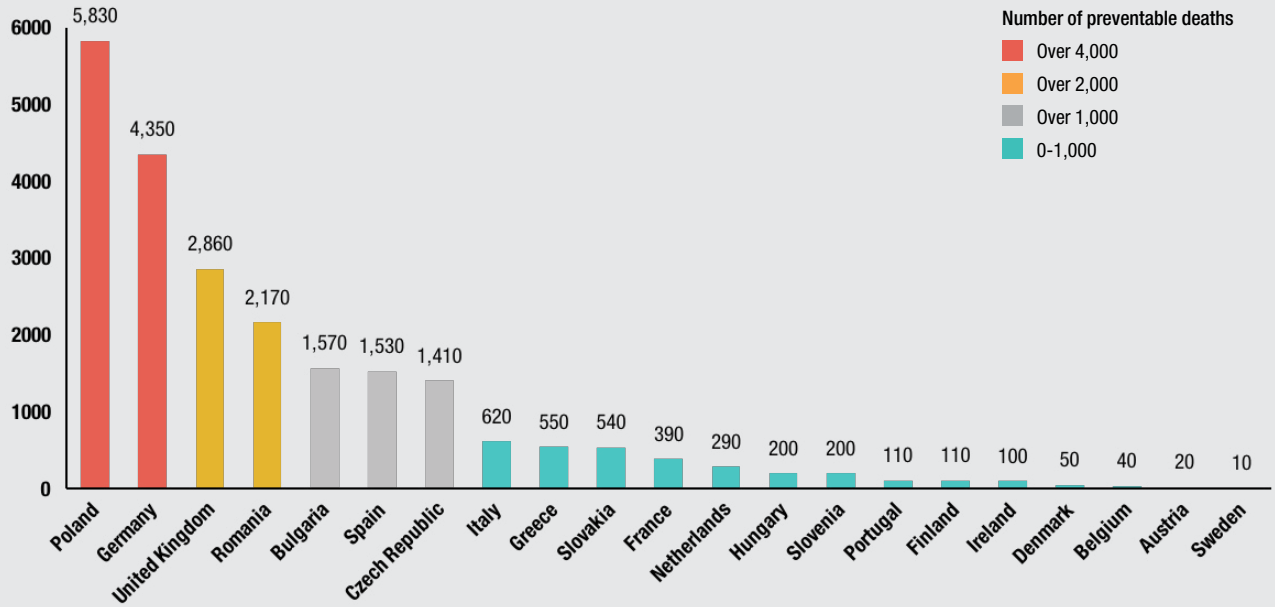
If countries are to meet these commitments, at least three quarters of the existing proven reserves of oil, gas and coal need to be left in the ground, and an urgent shift to low-carbon energy is imperative (Intergovernmental Panel on Climate Change (IPCC), 2014). As coal produces higher GHG emissions when burned than oil or gas – even in a 2°C warmer world – nearly all coal resources need to remain unutilised (Ekins and McGlade, 2015).

In terms of the implications for coal-fired power, the International Energy Agency (IEA) estimates that to get to 2°C degrees, coal power plant emissions in Europe must fall by 80% by 2030 (from 865 MtCO2 in 2014 to 175 Mt in 2030), and more than halve globally (a 54% drop, from 9,899 MtCO2 in 2014 to 4,581Mt in 2030) (IEA, 2016). A recent study by Carbon Tracker and the Grantham Institute indicates that global coal demand will peak in three years (by 2020) (Sussams et al., 2017). Climate Analytics has also estimated that a full coal phase-out by 2030 will be the cheapest way for Europe to meet the 1.5°C target and that Europe should replace this capacity with renewables and energy efficiency measures (Rocha et al., 2017). Germany and Poland have the most work to do on this coal phase-out, as they are jointly responsible for 51% of installed coal capacity and 54% of coal emissions (Rocha et al., 2017).

A coal phase-out is not only vital in terms of the climate, but also for helping improve air quality in Europe. Air pollution is the single largest environmental cause of premature death in the urban parts of the continent and emissions from coal plants are partly responsible for this, with around 23,000 early deaths every year because of coal burning (Jones et al., 2016) (see Figure 1). In February this year (2017), the European Commission ruled that 23 European Union (EU) countries have been breaking air quality laws, through emissions from vehicles, power plants, smelting and refuse burning (Crisp, 2017).

Driven by decarbonisation objectives and policies, as well as a sharp reduction in the cost of renewable energy technologies, electricity markets across Europe and other regions around the world are going through significant transformation (van der Burg and Whitley, 2016). A recent study has found that 92 gigawatts (GW) of coal plant capacity was halted in the EU in between 2010 and 2016, with only 25 GW implemented over the same time period (Shearer et al., 2017). Appendix 1 also contains information on number and capacity of coal plants cancelled in the countries reviewed in this study.

Figure 1: Premature deaths in Europe caused by coal plants, per country responsible



Source: Jones et al., 2016

These changing conditions are already altering utility business models in Europe. In 2016, Germany's two large power generators E.ON and RWE both announced that they would split off their conventional power production from their businesses focused on renewables[1] (Chazan, 2016). In 2015, Italy's largest utility, Enel, agreed to phase out new investments in coal and, in 2016, Denmark's DONG Energy committed to a phase-out by 2023: a company still had coal plants in the planning phase less than 10 years ago (Clark, 2017). These trends across the power sector are likely to become more widespread throughout Europe, with several countries having already achieved a coal phase-out or committed to end coal-fired power between 2023 and 2030 (see Box 1).

Despite these high-level pledges, governments have often used the energy transition, including a shift to renewables, as a justification for extending and introducing new subsidies to coal. Whether intentionally or not, these subsidies are now paying polluters and slowing the transition itself, while providing a lifeline to high-carbon assets. This trend continues, even though the phasing out of these subsidies is widely agreed to be critical for the energy transition and to ensure financial and economic sustainability, fight air pollution and achieve climate targets. It also presents an opportunity for Europe to demonstrate leadership both at home and abroad.

Europe's fossil fuel subsidy commitments

Prior to the Paris Agreement coming into force, European countries had already made repeated commitments to end fossil fuel subsidies, including support to coal.

- The European Commission has repeatedly called upon Member States to phase out environmentally harmful subsidies by 2020, including those for fossil fuels, and has made a commitment to eventually remove those to hard coal mining by 2018 ('European Council, 2010, European Commission, 2011).
- At the international level, the EU has:
  - committed to phasing out inefficient fossil fuel subsidies by 2025 through the G7 (G7, 2017),
  - reiterated its commitment to phase out inefficient fossil fuel subsidies every year since 2009, as part of the G20 (G20, 2016).
- In addition, all EU countries have committed to the Sustainable Development Goals (SDGs), which highlight phasing out fossil fuel subsidies as a means of implementing Goal 12 to 'ensure sustainable production and consumption patterns' (United Nations (UN), 2015).

In addition, under the Europe 2020 Strategy launched in 2010, EU Member States committed to begin developing plans for phasing out fossil fuel subsidies by 2020, with progress on implementing these plans to be monitored under the European Semester.[2]

Box 1: Coal phase-out commitments across Europe

Many countries and regions in Europe have already ended the use of coal-fired power, including Belgium, Cyprus, Luxembourg, Malta, Scotland and the Baltic countries. In addition, a number have already announced their intention to phase out coal in the electricity sector in future decades

- France – by no later than 2023
- The UK and Ireland – by 2025, with Austria and Denmark also likely to end coal use by around 2025.
- Sweden – in the next decade
- Finland and Portugal – by 2030

Also, despite not including any deadline for coal phase-out, the German Climate Action Plan 2050 does comprise a target that comes close to halving emissions from the power sector between 2014 and 2030.

Sources: (DeSmogBlog, 2016; CAN E, 2017; Rocha et al., 2017; Madson, 2017; Littlecott, 2017)

However, the decision was taken to remove the focus on energy and fossil fuel subsidies from the European Semester in 2015, and no new system for governing the phasing out of fossil fuel subsidies has been advanced since then (Sartor et al., 2015). The European Commission has also been sporadic in estimating and reporting on fossil fuel subsidies, with its last report released in 2014 (holding data up to 2012) and no plans to update this information (Alberici et al., 2014).

This gap in accountability for meeting subsidy commitments comes despite a recent Commission Report on 'Energy Prices and Costs' emphasising that 'fossil-fuel subsidies are particularly problematic, as they disadvantage clean energy and hamper the transition to a low-carbon economy,' and that 'the recent relative fall in energy prices should make it easier for governments to remove tax exemptions and other energy demand subsidies' (European Commission, 2016).

An approach for tracking coal subsidies in Europe

Although there are significant commitments by European countries to move away from coal, along with parallel pledges to end fossil fuel subsidies per se, there are limited mechanisms for holding governments to account in achieving those pledges.

To that end, the Overseas Development Institute (ODI) has sought to identify and estimate the value of ongoing subsidies to coal across 10 European countries (reviewing budgetary support and tax breaks).[3] The countries reviewed include: Czech Republic, France, Germany,

Greece, Hungary, Italy, the Netherlands, Poland, Spain, and the United Kingdom - representing 84% of Europe's energy related GHG emissions in 2012 (World Resources Institute, 2015).

Detailed information about historic, continuing, and new subsidies to coal has been compiled within 10 country briefs, which have also been translated into national languages to support engagement with governments in each country.

This information was collected from publicly available sources, including important resources such as the OECD, European Commission, IEA and public budget documents. Each country brief has been peer reviewed by subsidy experts from each of the countries analysed. This policy briefing summarises the findings from those 10 studies (see Table 1 and Appendix 2 for data) and outlines recommendations for how countries across Europe can lead in the active effort to end coal subsidies to coal.

The continuing and new coal subsidies reviewed have been further categorised in terms of their role in supporting the following:

Subsidy categories

1. coal mining
2. decommissioning and environmental rehabilitation
3. transition support (individuals and communities)
4. refining and processing
5. capacity mechanisms (see Box 2)
6. biomass co-firing
7. coal-fired power (other) in addition to that under categories 5 and 6
8. EU Emissions Trading Scheme (EU-ETS)
9. industry
10. households
11. research and development.

Findings[4]

Despite significant commitments to address climate change, fossil fuel subsidies and air pollution, all 10 European countries reviewed still provided some form of subsidy to coal in 2016.

In aggregate, these ten countries have provided €6.3 billion per year in continuing and new subsidies to coal (on average 2005 to 2016), across a total of 65 subsidy measures identified (see Table 1 and Appendix 2). Six of the 10 countries reviewed have introduced eight new coal subsidies, worth €875 million per year, since the Paris climate agreement in 2015.

Although the value of several continuing and new subsidies (16 out of 65) could not be quantified (see following section), the highest level of average annual subsidies is provided by this year's G20 host, Germany. This includes over €2 billion in subsidies to coal mining, which Germany has committed to ending by 2018.

Transparency – subsidy reporting

As outlined above, European governments have made significant commitments at the EU, G7 and G20 levels to phase out fossil fuel subsidies. The first step in achieving these objectives is to clearly identify and estimate current subsidies, including through processes such as the G20 peer reviews (Organisation for Economic Cooperation and Development, 2016).

Unfortunately, transparency of information on all fossil fuel subsidies, along with accountability for phasing out those to coal remains limited. Across the full analysis, 16 out of the 65 subsidies identified could not be quantified. Most non-quantifiable subsidies are linked to support for the use of coal for power or industry, while there is far more data available for subsidies to coal mining. This increased transparency of information on coal mining subsidy is likely linked to the EU directive on phasing out state aid (subsidies) to uncompetitive hard coal mines by 2018 (see next section).

Overall, the analysis of subsidy reporting demonstrates the significant gap between European countries in terms of their reporting on subsidies (including those to coal) (see Table 2). Only one country reviewed, Germany, regularly reports on its subsidies including those to coal. This takes place under the biannual Subventionsbericht der Bundesregier-ung - or Subsidy Report of the Federal Government. In 2017, Germany is also participating alongside Mexico in a peer review process of its fossil fuel subsidies.

Italy has also completed a first-time inventory of environmentally harmful subsidies – including to fossil fuels – by launching a Catalogo dei Sussidi Ambientali (dannosi e favorevoli) at the end of 2016 (see also Germany and Italy country briefs). In sharp contrast, the UK government explicitly denies that it provides any subsidies to fossil fuels (see UK country brief) although UK's fossil fuel subsidies have been documented by the OECD and the International Monetary Fund (IMF).

Coal mining – subsidy phase-out

Subsidies to coal mining still represent the highest proportion of total coal subsidies provided across the 10 countries reviewed (see Table 1, category 1 - 48% by value). With the caveat that the high relative value of subsidies to coal mining may partly be attributed to it being more transparently reported than subsidies to coal- fired power. These subsidies are increasingly framed to represent a shift away from supporting ongoing mining, and towards facilitating the closure of coal mines. This is linked to the EU directive on phasing out state aid to uncompetitive hard coal mines by 2018, along with the fact that many coal mines in Europe are no longer making profits and are not expected to do so in the future. In addition, 8% of total subsidies to coal by value (or €494 million per year) across the 10 countries are

Table 1: New and continuing subsidies to coal in Europe (average annual 2005-2016 € million) (for additional details, see Appendix 2)

Country / subsidy category	1. Coal mining	2. Transition support (workers and communities)	3. Decommissioning and environmental rehabilitation	4. Refining and processing	5. Capacity mechanism	6. Biomass co-firing	7. Coal-fired power (other)	8. EU Emissions Trading Scheme (EU ETS)	9. Industry	10. Households	11. Research and development	Country total	Count total number of current subsidies
Czech Republic	66.2	8.0	6.4	0.0	0.0	0.0	0.0	Data not available	0.0	34.1	0.5	**115.2**	6
France	0.0	0.0	0.0	0.0	Data not available	0.0	Data not available	0.0	2.3	0.0	0.2	**2.4**	4
Germany	2,248.2	176.1	239.4	9.8	230.0	0.0	154.1	0.0	128.8	0.0	15.8	**3,202.1**	12
Greece	0.0	0.0	0.0	0.0	149.3	0.0	Data not available	0.0	1.3	Data not available	0.0	**150.6**	4
Hungary	0.0	28.7	3.4	0.0	0.0	0.0	32.7	0.0	0.0	8.7	0.0	**73.5**	5
Italy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Data not available	0.0	0.0	8.9	**8.9**	2
Netherlands	0.0	0.0	0.0	0.0	0.0	450.0	189.0	0.0	0.0	0.0	0.2	**639.2**	3
Poland	389.1	273.5	230.0	0.0	Data not available	Data not available	0.0	Data not available	0.0	9.5	17.5	**919.5**	12
Spain	283.1	372.8	15.0	0.0	83.0	0.0	Data not available	0.0	0.0	0.0	0.5	**754.4**	9
UK	48.6	0.0	Data not available	0.0	138.4	0.0	238.4	0.0	0.0	0.0	9.0	**434.5**	8
TOTAL (10 countries)	**3,035.2**	**859.0**	**494.2**	**9.8**	**600.7**	**450.0**	**614.3**	**Not available**	**132.3**	**52.3**	**52.5**	6,300.3	**65**

Table 2: Scoring of countries by transparency of coal subsidy reporting. (For additional details see each country brief.)

Country	Czech Republic	France	Germany	Greece	Hungary	Italy	Netherlands	Poland	Spain	UK
Transparency	Poor	Poor	Very good	Poor	Poor	Good	Poor	Poor	Good	Very poor

Scoring criteria

Very good: Regular reporting of fossil fuel subsidies (i.e. annually or biannually), including those to coal and participation in fossil fuel subsidy peer review.

Good: Reporting of fossil fuel subsidies, including those to coal, although not on a regular basis (i.e. annually or biannually).

Poor: No reporting of fossil fuel subsidies, including those to coal, except for in international inventories, including those of the OECD and IMF.

Very poor: Statement denying provision of fossil fuel subsidies, including those to coal, despite documentation in international inventories, together with those of the OECD and IMF.

Table 3: Scoring of countries by progress in phasing out subsidies to coal mining (see categories 1, 2 and 3 in Table 1). (For additional details see each country brief.)

Country	Czech Republic	France	Germany	Greece	Hungary	Italy	Netherlands	Poland	Spain	UK
Coal mining – subsidy phase out	Good	Not applicable – no coal mining	Good	Good	Good	Good	Not applicable – no coal mining	Good	Good	Poor

Scoring criteria

Good: Subsidies are only being provided with the stated objective of supporting the phase out of coal mining activities, including the transition of workers and communities

Poor: Subsidies are being provided to ongoing coal mining activities

Table 4: Scoring of countries by progress in phasing out subsidies to coal-fired power (see categories 5, 6, 7 and 8 in Table 1). (For additional details see each country brief.)

Country	Czech Republic	France	Germany	Greece	Hungary	Italy	Netherlands	Poland	Spain	UK
Coal-fired power – subsidy phase-out	Poor	Very poor	Very poor	Very poor	Very poor	Poor	Poor	Very poor	Poor	Poor

Scoring criteria

Good: No subsidies to coal-fired power identified

Poor: Subsidies are being provided in the context of the transition away from coal-fired power. Namely for plant or facility upgrades, or to compensate plants as part of a closure plan.

Very poor: Subsidies are being provided to ongoing coal-fired power production

directed towards the decommissioning and environmental rehabilitation of coal mines (see Table 1, category 2).

As with the level of transparency of subsidies, countries are found to be at different stages in terms of phasing out subsidies to coal mining (see Table 3). Many remaining subsidies to coal mining are focused on closing coal mines (e.g. in the Czech Republic, Germany, Greece, Poland and Spain). Though its mining industries are far smaller, the UK contrasts with this, as it still provides various tax benefits to ongoing coal mining (see Box 2 and UK country brief).

Box 2: Ending subsidies to coal mining – the example of Germany

In 2010, the EU took a significant step towards ending hard coal mining subsidies, by committing to phase them out by the end of 2018. However, it could also be said that, with this decision, it allowed support for an uneconomic activity to continue for an additional eight years. Although most coal mining subsidies are currently thought to support the transition away from mining activities, a significant share of this aid allows the continued operation of hard coal mines, including through assisting the sales of domestically produced coal.

The largest subsidy to coal identified in this review of 10 European countries provides a key example of this. Combined Aid in North Rhine Westphalia primarily supports the sale of coal from German hard coal mines to electricity and steel producers. This subsidy has an estimated annual cost of €1.86 billion and the German government spent an estimated €18.6 billion in total on this measure between 2005 and 2014. Although we have not been able to find recent information related to this, we understand that the German hard coal corporation RAG AG provides some level of limited matching funding.

The scale and duration of this coal mining subsidy begs the question of whether these government resources have been used in the best possible way to support a just transition away from coal, instead of propping up an uneconomic and high-carbon industry. It also raises the question of what the balance of responsibilities should be in terms of shutting down coal mines and to what extent companies should set aside resources to cover these costs. As all EU member states are supposed to phase out aid to hard coal mines by 2018 – and as the European Commission has called for an end to environmentally harmful subsidies by 2020 – it will be important to draw lessons from the German experience. This will be critical, not only to manage the ongoing transition away from coal mining, but also in the move from coal power production.

Sources: (European Council, 2010; OECD, 2015)

Coal-fired power – subsidy phase-out

In contrast to the shift in support to coal mining heading towards closure, many of the new subsidies for coal-fired power being introduced risk lengthening the life of assets. This comes despite several countries' commitments to phase out coal-fired power (see Box 1).

Some of the measures with a stated objective to support the energy transition to lower-carbon sources and efficiency are in fact facilitating the use of coal (€1 billion per year). This includes subsidies provided via capacity mechanisms (see Box 3), support to biomass power, and the EU Emissions Trading Scheme (see Table 1 - categories 5, 6 and 8).

These new subsidies can undermine measures (e.g. carbon price support in the UK) that are meant to increase the cost of coal-fired power to achieve emission reduction objectives. In some cases, such as in Germany, initial plans for measures that were meant to ensure that the polluter pays have eventually succumbed to pressure from

Box 3: Capacity mechanisms

With renewables accounting for an increasing share of electricity generation, many governments have become concerned about the ability to balance supply and demand when the sun is not shining and the wind is not blowing. In response, a renewed interest in 'capacity mechanisms', which offer extra payments to operators that can either turn up their supply or turn down their demand, has emerged.

Although they may appear to provide a solution for governments seeking to balance the objectives of increasing renewable energy with ensuring security of supply, capacity mechanisms have also tended to result in large payments to fossil fuel-fired generation (including to coal plants that would otherwise be uneconomic).

For example, the UK's annual capacity market auction has received criticism for discriminating against low-carbon options, overestimating future supply needs, favouring fossil fuels and delaying coal-plant decommissioning. Germany has plans to establish a capacity reserve under which 2.7 GW of coal-fired generation will receive (currently undefined) payments for staying available as back-up capacity until 2021. A planned new capacity reserve is currently under in-depth investigation by the European Commission. Meanwhile, Poland plans to spend over EUR 20 billion to finance the creation of a capacity market, with some members of the government openly discussing which coal-fired power plants would be financed by this mechanism.

Sources: (van der Burg and Whitley, 2016; Littlecott, 2014; European Network of Transmission System Operators for Electricity (ENTSOE), 2015; ClientEarth, 2016; European Commission, 2017; and Zasuń et al., 2016)

companies and been replaced by subsidies that do the opposite and pay the polluter (see Germany country brief).

The European Commission has noted that careful design of capacity mechanisms is needed to ensure they do not 'contradict the objective of phasing out environmentally harmful subsidies, including for fossil fuels' (European Commission, 2014). To this end, the Commission has suggested banning new power plants that emit more than 550 g CO2/kWh from participating in these schemes (Rocha et al., 2017). Such a limit should be introduced by all European governments for both existing and planned capacity mechanisms and coal plants, with immediate effect, as it would effectively prohibit coal-fired power plants from profiting from these schemes.

Both Article 10c and the planned Modernisation Fund under the EU's Emissions Trading Scheme are aimed to be transitional mechanisms for supporting the transformation and diversification of energy systems. However, in the current phase of the ETS, a significant proportion of Article 10c support has been used to finance the retrofits of coal capacity in Central and Eastern Europe (CEE) (see Czech Republic and Poland country briefs). In terms of ending coal subsidies through the EU ETS, a strict emissions performance standard should also be applied to the Modernisation Fund and Article 10c. This will ensure that these instruments will be used to support investments to energy efficiency and renewable energy sources rather than coal.

In contrast to variations in support to coal mining, as well as progress in terms of subsidy transparency, European countries seem to be on a fairly level playing field when it comes to progress in phasing out subsidies to coal-fired power, along with other uses of coal by industry and households (see Table 4). Overall, all 10 countries reviewed continue to subsidise coal use in some form, with progress in phasing out subsidies to coal-fired power being hampered by new subsidies to coal that have been introduced under the auspices of the energy transition.

Supporting a just transition away from coal

Under the Paris Agreement, all countries have committed to "taking into account the imperatives of a just transition[5] of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities". Given these pledges, one would expect that the European countries reviewed in this study will be dedicating any government support to the sector[6] towards a just transition away from coal consumption and production. In contrast, we have found that only a small minority of subsidies by value (14%) are supporting workers and communities to this end.

Subsidies with the stated objective of supporting the transition of workers and communities were found to be higher in scale in countries where coal has historically been significant to the economy (e.g. Germany, Hungary and Poland). However, there is generally limited information on how this money will be spent, and it is difficult to distinguish in some cases between the proportion of funds dedicated to decommissioning and rehabilitation of mine sites, and that dedicated to communities and workers.

Any remaining subsidies to coal must be focused on supporting a just transition for workers and communities, in a manner that is balanced in terms of ensuring that companies and utilities also meet their obligations for support. To that end, the European Parliament has voted to revise its ETS Directive, to create a Just Transition Fund. If passed by the European Council, this mechanism will allow for some of the funds raised by the auction of emissions certificates to be used for just transition measures. This will include education and training, support in job-seeking, business creation and mitigating the impact of restructuring process on physical and mental health (IndustriALL Global Union, 2017).

Conclusions and recommendations

To achieve Paris Agreement climate targets, fight air pollution and protect health, as well as support a just transition to low-carbon energy systems, European countries will need to rapidly phase out coal. Driven by sharp reductions in the cost of renewable energy technologies, effective campaigns and legal action by civil society groups, governments are implementing various measures to make this happen. However, at same time, they are offering new subsidies that provide a lifeline to coal.

There are three key areas that European governments must focus on to achieve a complete phasing out of subsidies to coal: 1) increasing tracking and transparency, 2) ensuring all instruments to support the energy transition – such as capacity mechanisms and the EU ETS – do not subsidise coal, and 3) guaranteeing that any remaining subsidies are focused on supporting workers and communities affected by the coal phase-out.

- Governments in Europe must ensure that mechanisms with the stated focus of supporting the energy transition do not support coal. This includes ending subsidies for coal under the EU's Emissions Trading Scheme, under new and existing capacity mechanisms, and through subsidies to biomass power generation.
- Any remaining subsidies must be focused on supporting a just transition for workers and communities – ensuring that companies and utilities also meet their obligations.
- The above must be supported by increased transparency and accountability to meet existing subsidy phase-out commitments – with all governments undertaking consistent annual reporting of subsidies to coal and other fossil fuels.

It clear that countries in Europe are at the forefront of moving towards zero carbon energy systems (see Box 4). However, to achieve this goal, all government resources must be used to accelerate the energy transition, not slow it down. European governments must demonstrate global leadership and this must begin with phasing out subsidies to coal, followed by an end to all fossil fuel subsidies.

Box 4: Is the transition away from coal achievable?

Recent analysis by Carbon Tracker and the Grantham Institute has found that solar PV (with associated energy storage costs included) could supply 23% of global power generation in 2040 and 29% by 2050, allowing for a complete phasing out of coal and leaving natural gas with just a 1% market share (Sussams et al., 2017).

In Europe, both Germany and the UK have shown that electric grids can cope well with a coal phase-out. In the UK, coal use has declined substantially in recent years without any disruption to security of supply; as the remaining coal plants are taken offline, the challenge for government is to encourage more investment in renewables, energy efficiency, storage and demand-side management (Wynn, 2017).

New data from Wind Europe indicates that renewable energy sources made up nearly nine-tenths of new power added to Europe's electricity grids last year, with wind power outstripping coal to become the EU's second largest form of power capacity (Vaughan, 2017).

Appendix 1

Coal-fired power plants (number and capacity (MW)) by countries reviewed in this study – January 2017 (Source, Global Plant Tracker, 2017)

Country (number of plants)	Announced	Pre-permit development	Permitted	Construction	Shelved	Operating (units)	Cancelled 2010-2016
Czech Republic	0	0	0	4	0	93	1
France	0	0	0	0	0	10	0
Germany	0	2	0	1	1	147	33
Greece	1	0	0	0	1	17	6
Hungary	0	1	0	0	0	12	7
Italy	0	1	0	0	6	32	6
Netherlands	0	0	0	0	0	8	1
Poland	0	4	1	5	2	179	17
Spain	0	0	0	0	1	37	0
United Kingdom (UK)	0	1	0	0	1	31	17

Country (MW)	Announced	Pre-permit development	Permitted	Construction	Shelved	Operating	Cancelled 2010-2016
Czech Republic	0	0	0	1,410	0	9,004	1,200
France	0	0	0	0	0	3,286	0
Germany	0	2,020	0	1,100	660	53,060	27,443
Greece	450	0	0	660	0	4,925	3,720
Hungary	0	500	0	0	0	1,274	3,019
Italy	0	0	0	0	3,060	9,640	3,640
Netherlands	0	0	0	0	0	5,860	1,311
Poland	0	4,820	1,000	4,245	1,500	27,761	15,283
Spain	0	0	0	0	800	10,989	0
United Kingdom (UK)	0	570	0	0	470	13,100	16,298

Appendix 2

Cutting Europe's lifelines to coal: subsidy overview data on ODI website ↗

Country briefs:

Czech Republic ↗

France ↗

Germany ↗

Greece ↗

Hungary ↗

Italy ↗

Netherlands ↗

Poland ↗

Spain ↗

United Kingdom ↗

Notes

1 Both RWE and Eon have divided themselves in two, creating respectively the entities Innogy and Uniper. RWE and Uniper have the old gas and coal-fired power stations, while Eon and Innogy hold the clean, green businesses such as infrastructure and renewables (Chazan, 2016).

2 The European Semester provides a framework for the coordination of economic policies across the EU, allowing countries to discuss their economic and budget plans and monitor progress at specific times throughout the year.

3 Although not included in our analysis, subsidies are also provided to coal in Europe through a broader range of instruments than budgetary support and tax breaks. This includes investment by state-owned enterprise and public finance, such as two new lignite power plants in Greece receiving support through Public Power Corporation (PPC), with one of the plants being underwritten by a loan from a consortium led by KfW-Ipex, the German public export credit agency (See Greece country brief).

4 These estimates do not include historic subsidies that have been phased-out, which are discussed within each country brief, but not included in totals.

5 Per the International Trade Union Confederation, a just transition brings together workers, communities, employers and government in social dialogue to drive the concrete plans, policies and investments needed for a fast and fair transformation. This focuses on jobs, livelihoods and ensuring that no one is left behind as we race to reduce emissions, protect the climate and advance social and economic justice.

6 For context, the European Association for Coal and Lignite (EURACOAL) estimates that in 2015, coal mining employed 185,000 people across the region, including some at integrated mine and power plants. This is 0.08% of the EU's total workforce which is currently estimated at 220 million (EURACOAL, 2016; Eurostat, 2017).

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Overseas Development Institute
203 Blackfriars Road
London SE1 8NJ
Tel +44 (0)20 7922 0300
Fax +44 (0)20 7922 0399
www.odi.org
info@odi.org